



## ***TECHNICAL FEATURES OF “Titan” SLUG WRENCH***

1. **MATERIAL:** Chrome Vanadium Steel T50Cr4V2 conforming to IS 3749–1978/AISI- 6150.  
We ensure the Quality of Raw Material by following tests :
  - a. Chemical Compositions, even levels of detrimental impurities such as P & S are checked to see that they are below the normal commercial standards.
  - b. Macro & Micro inclusions controlled.
  - c. Harden ability defined.
  - d. Ultrasonic / Magna - Flux testing ensured.
  - e. Grain Size controlled.
  - f. Apart from selecting the Best Suited Alloy Steel for our Slugging Wrench, we procure our Complete Alloy Steel consumption from a Single Source. Great care in selection and Sourcing of our Basic Raw Material is one of the Major Factors leading to Superior Performance of our end Products.  
\* **Quality Assurance Test:** All the tests necessary to ensure that compliance of material to the specifications are carried out at our works before shipment of the product.
2. **DESIGN:** Our Slugging Wrenches are designed in accordance with U. S. A. Federal specifications GGG - W - 636E.
3. **FORGINGS :**
  - \* All the Slugging Wrenches are made from Single Piece forging made in closed dies. The dies are designed to optimize the grain flow for maximum strength. The forgings are provided with liberal fillet radii at all critical points.
  - \* These forgings are trimmed loose with a minimum residual flash. This flash is dressed by grinding before hardening.
  - \* Each forging is individually tested for defects such as, cracks, folds, laps.
4. **MANUFACTURE :**
  - \* Equal care is taken during manufacture. The Bi-hexagon opening are precision machined to close range of tolerances as per USA Federal Standard 346 C and IS 2027 - 1980 (Closed range)
5. **INSPECTION :**
  - \* 100% inspection at each stage of the manufacture.
  - \* Each piece is assigned its own distinctive serial number for its identification throughout the Tool life since its inception. Complete record of its hardness and material heat is maintained.
6. **HEAT TREATMENT :**
  - \* An exhaustive heat treatment including special multiple tempering cycle is carried out on electric salt bath tempering furnaces fitted with automatic temperature controllers with temperatures maintained to an accuracy on + / - 5 Degree C.
  - \* Hardness Checking : A 100% check is carried out on each and every piece after every stage of temper.

..... Contd. Page 2 .....

..... Page 2 .....



7. **FINISHING :**

- \* These Slugging Wrenches are finished Black using a Patented rust resistant Manganese Phosphate process.
- \* Pre-cleaning before blackening is carried by blasting using Aluminum Oxide grit. Acid cleaning is not allowed to prevent loss of fatigue strength on account of hydrogen embrittlement associated with acid cleaning.
- \* Nickel Cr. Plating is also not allowed as it has a tendency to flake out during impact use and there is a reduction in fatigue due to Hydrogen embrittlement by the Plating processes.

8. **HARDNESS :**

Final Hardness of finished Slug Wrenches is as under :

<u>A/F Size</u>	<u>Hardness Of Slugging Wrench</u>
Up to 46mm	38 to 44 HRC
50 to 65mm	37 to 41 HRC
65 to 80mm	36 to 40 HRC
Above 80mm	34 to 40 HRC

9. **DIMENSIONS :** The dimensions of Sledge Block as per U.S.A. Federal Specification GGG - W - 636 E

10. **TESTING :** Wrenches are tested as per U.S.A Federal standard GGG - W - 636E by 100 impact blows and assessing the damage to the Slugging Wrench for any Permanent deformation.

11. **WARRANTEE / GUARANTEE :**

The Wrenches are warranted against any manufacturing defect or workmanship for a Period of 12 Months from the date of Supply. Guarantee provides for free replacement / repair due to failure of manufacturing defects or workmanship with the supply.